SiEUGreen
Sino-European innovative green and smart cities

Sino-European Innovative Green and Smart Cities

Deliverable 3.1

Requirement plans for each of the showcase locations

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Disclaimer

SiEUGreen

The project has received funding from the European Union's Horizon 2020 Research, and Innovation programme, under grant Agreement N 774233 and from the Chinese Ministry of Science and Technology.

Throughout SiEUGreen's implementation, EU and China will share technologies and experiences, thus contributing to the future developments of urban agriculture and urban resilience in both continents.

The project SiEUGreen aspires to enhance the EU-China cooperation in promoting urban agriculture for food security, resource efficiency and smart, resilient cities.

The project contributes to the preparation, deployment and evaluation of showcases in 5 selected European and Chinese urban and peri-urban areas: a previous hospital site in Norway, community gardens in Denmark, previously unused municipal areas with dense refugee population in Turkey, big urban community farms in Beijing and new green urban development in Changsha Central China.

A sustainable business model allowing SiEUGreen to live beyond the project period is planned by joining forces of private investors, governmental policy makers, communities of citizens, academia and technology providers.

Technical References

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[1] **PU** = Public
PP = Restricted to other programme participants (including the Commission Services)
RE = Restricted to a group specified by the consortium (including the Commission Services)
CO = Confidential, only for members of the consortium (including the Commission Services)

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1.2	10/12/2018	VILABS	Draft circulated in the consortium
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Executive Summary

This deliverable presents the requirements for the deployment of the showcases of the project SiEUGreen. It elaborates the initial requirements that were established by the showcase leaders in the SiEUGreen kick-off meeting and proposes additional ones.

The goal of the deliverable is to help the showcase leaders towards the effective and timely deployment of the showcases. Briefly the deliverable provides instructions and suggestions to showcase leaders as regards the establishment of the showcase vision, the deployment of the technologies, stakeholder and end-user engagement and other relevant issues.

The deliverable is addressed primarily to the SiEUGreen showcase leaders (Changsha: HHEPSTI, Beijing: CAAS, Hatay: Hatay Municipality, Frederikstad: NMBU, Aarhus: Nordregio and Aarhus municipality) who are asked to read it thoroughly in order to provide input towards the development of the Common Implementation Framework (D3.2). Additionally the deliverable is addressed to the technology providers (NIBIO, NMBU) who are expected to collaborate with the showcase teams to help them meet the technical and regulatory requirements. Last, it is addressed to all the partners who are related to the showcase deployment (NORDREGIO, NIBIO, CREVIS, EMETRIS, HHEPSTI, OKYS, A-AQUA AS).

The deliverable will be useful for the partners throughout the period of the deployment of the SiEUGreen showcases, as a guide on what needs to be accomplished. However, most of the requirements need to be met by the beginning of the showcase deployment or at the very early stages.

The current deliverable is the first of WP3 and establishes the ground for the deployment of the showcases of SiEUGreen. It will be complemented by deliverable D3.2 “Common implementation framework”, which will present how the showcases are going to meet the requirements and elaborates a reporting methodology. Subsequent deliverable D3.3 “Mid-term showcase deployment report” and D3.4 “Final showcase deployment report” will present the reporting from the showcases. Deliverable D3.5 “City benchmarking” will provide an assessment of the impact of each showcase and compare them with each other in a benchmarking exercise. Last (but earlier than D3.5) deliverable D3.6 “Commurban software delivery” will provide the app for the engagement of citizens with Urban Agriculture (UA) in the showcase locations.

Table of Contents

1. Introduction

1.1 Overall objectives

Five showcases in European and Chinese urban and peri-urban areas will demonstrate the novel SiEUGreen project technologies, aiming to achieve a positive impact on society and economy. The five showcases are located in Aarhus (Denmark), Fredrikstad (Norway) and Hatay (Turkey), Sanyuan Farm (Beijing, China) and Hemeixingcheng Changsha (China). They implement both the technological and the social innovations aiming to demonstrate how different UA technologies can be implemented in practice. The project technologies are grouped into the following categories[1]:

- **Green technologies** for waste recycling from household and garden waste using dry composting anaerobic digestion (biogas production)
- **Blue technologies**, wastewater and water reuse technologies and alternative toilet systems
- **Yellow technologies**, biogas production from waste resources, seasonal solar storage, combined heat and power, and photovoltaic generation of electricity
- **IT software**, an application for more active social engagement and an interactive platform and resource center for raising awareness and sharing best practices.

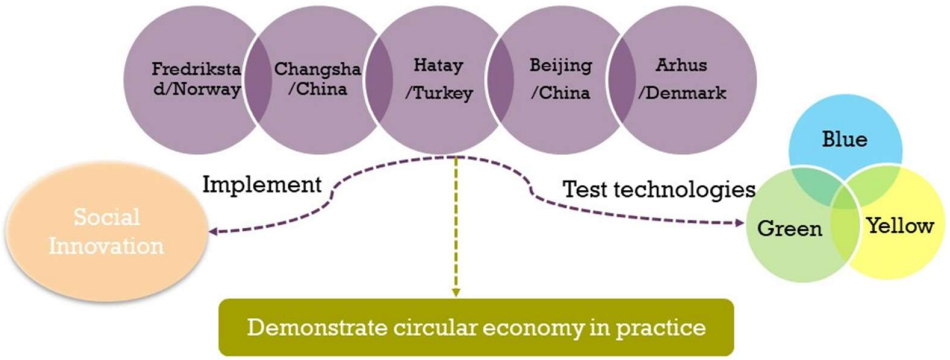

Figure 1: SiEUGreen Showcases Rationale

Showcases' organisation and implementation activities will run under the WP3 'Showcase deployment'. Thus, WP3 includes three basic tasks that focus on:

[1] to be defined under WP2 'Development of sustainable and circular urban farming systems'

- **Prepare the ground** by organising the SiEUGreen showcases deployment (Task 3.1 - Requirement setting, benchmarking of local conditions and planning of the showcases at technology and social level)
- **Facilitate showcases implementation**, along the different phases; a) technology testing, b) measurable data feedback to research, c) adjustments and improvements. (Task 3.2 - Showcase deployment)
- **Evaluate the showcases**, carrying out evaluation exercises that will report quantitative and qualitative data. (Task 3.3 - Benchmarking and impact assessment)

Starting from the **ground preparation**, this report is the requirement plan that describes the procedures that every SiEUGreen showcase should follow to test the project technologies in real environment. Therefore, the requirement plan will support showcase partners organize their activities throughout the project, including:

Prepare the showcase

1. Define the vision: Each showcase team should elaborate a vision, which shall address the four pillars of UA as established in D1.1: Land use, food security, resource efficiency and societal inclusion. In section 2.1, a number of instructions are presented on how to elaborate this component of the showcase deployment. It should be noted that the vision should be aligned with the SiEUGreen vision as it is presented in the Grant Agreement. A short summary is presented in section 2.1.
2. Engage the targeted communities: End-user and stakeholder engagement is very important as it will determine to a great extent the impact of the showcase and the potential for replication. In section 2.2, we describe what this engagement should entail and how it can take place. For example, plan activities, identify roles, timetables. Planning thoroughly is essential for the successful implementation of the showcases. Planning includes the establishment of an elaborated time-frame, in accordance with the time-plan of the Grant Agreement, the definition of roles and responsibilities within the showcase team and the planning of the specific activities to take place in the context of the showcase.
3. Plan reporting periods and details for each activity needed to be carried out during each piloting phase, ensuring the expected impact: In order to ensure that the showcases are being implemented according to schedule a reporting methodology will be developed in D3.2 “Common implementation framework”.

Implement the showcase

1. Perform the required tasks with the available resources (human and infrastructures), considering the time of the project duration: The implementation of the showcases should take place according to the plan and within the time and budget limits set out in the Grant Agreement . This will be ensured by the thorough and realistic planning and the allocation of responsibilities in the showcase team members with experience in each component of the showcase, as described above and in section 2.2 of this deliverable.
2. Spread information about the project results: Dissemination is a critical component of the showcase deployment. A specific member of the showcase team should be responsible for this activity and he/she should define together with the project Dissemination leader (EMETRIS) the activities to carry out, the channels to use and the envisaged results.
3. Periodic report of activities carried out: The showcase team should establish who will be responsible to report on the activities that have taken place and ensure that the reporting is comprehensive and in accordance with the methodology.

Evaluate the showcase

1. Report the activities carried out and evaluate the expected impact periodically to ensure the progress on each pillar of UA of SiEUGreen (Land use, Food security, Resource efficiency, Societal inclusion)

With regard to the sustainability of the showcase beyond the end of the project, this requirement plan does not foresee any preparatory activities because there is a dedicated WP5 (Business modelling and sustainability) whose main target is this purpose.

1.2 The process

The requirements established in this report are based on an in-depth analysis of the key elements of the SiEUGreen Grant Agreement, especially as regards the deployment of the SiEUGreen technologies in the different showcase locations. The deliverable also capitalizes on deliverable D1.1 “Maps of Quantitative and Qualitative Data for each of the Showcase Locations: A Synthesis Report”, in which the four pillars of UA established in the SiEUGreen Grant Agreement have been analysed. These pillars are: Land use, food security, resource efficiency and societal inclusion.

The implementation of the showcases will be split into three Phases; Phase 1: technology testing, Phase 2: measurable data feedback to research, and Phase 3: adjustments and improvements. In Phase 1 the showcases will deploy the technologies specified in the Grant Agreement in the different settings of UA in their cities / urban agglomerations. In Phase 2, which will be facilitated by the reporting methodology (see Deliverable D3.2), the showcases will provide feedback on how the technologies can be best adjusted and improved, so that in Phase 3, the adjustments will be performed by the technology providers (NIBIO and NMBU) in order for the technologies to reach a higher TRL level, as specified in the GA.

The timeline below presents the chronological order of the Tasks that showcases should follow to reach their targets on time, within the frame of the SiEUGreen project duration.

Figure 2: WP3 timeline

1.3 Structure

In Chapter 2 the requirements analysis is presented. It includes the description of all the requirements that need to be met in order for the showcases to be executed effectively, efficiently and on-time. In Chapter 3 the conclusions derived primarily from Chapter 2 are presented. In Annex A presents the templates the showcase teams must fill in in order to meet the requirements.

1.4 Intended audience

This report is aimed to be used primarily internally by the consortium members, especially by the participants who are involved in the showcase preparation and implementation. Additionally, the Advisory Board is expected to consult this report when providing suggestions towards the benchmarking exercise. The report is also addressed to the European Commission which will evaluate the rigour of the planning of the SiEUGreen

showcases. Last, the deliverable can serve as a preparatory document for anyone who would like to organise similar activities, promoting UA in their location.

2. Showcase requirements analysis

2.1 Vision, objectives and KPIs

Initially, each showcase should present its vision, objectives and key performance indicators (KPIs).

The vision is a statement that should reflect the showcases aspirations: How they envisage circular UA (UA) to transform their cities / urban agglomerations. A strong vision is one that is broad enough to be understandable by all relevant actors (within and beyond the consortium) and specific to differentiate the showcases from other UA projects[2]. The vision should be maximum 1/3 of a page long.

The objectives should facilitate the operationalisation of the vision by being Specific, Measurable, Actionable, Results-oriented and Time-bound (SMART[3]).

Last the key performance indicators (KPIs) are quantified targets that allow for the measurement of the accomplishment of the objectives.

The vision should, first, be aligned with the SiEUGreen vision as presented in the Grant Agreement, p.138:

> *SiEUGreen aspires to enhance the EU-China cooperation in promoting UA for food security, resource efficiency and smart, resilient cities through the development of showcases in selected European and Chinese urban and peri-urban areas… Building on the model of zero-waste and circular economy, SiEUGreen will combine technological and societal innovation, by providing innovative technological tools, novel methodologies for cultural and behavioural analysis and impact assessment tools…In addition to the technological impact beyond the project period, we are also strongly focused on the social and economic impact, the people and people's happiness index.*

[2] See McKinsey (2014), The Aligned Organisation, p. 138.
[3] See McKinsey (2017), How effective goal-setting motivates employees, https://www.mckinsey.com/business-functions/organization/our-insights/the-organization-blog/how-effective-goal-setting-motivates-employees (accessed: 18 December 2018).

The objectives of each showcase should refer to the four SiEUGreen pillars of UA, as set out in Deliverable D1.1 "Maps of quantitative and qualitative data for each of the showcase locations - Synthesis report".

Of course each of the showcase locations can pay special attention to one or more of the four pillars, based on the local conditions and context, and on the stage of development of UA in their location.

Additionally to the vision and objectives, each showcase should establish a number of Key Performance Indicators (KPIs), i.e. quantified targets which measure the progress in the accomplishment of the objectives. These should fulfill the minimum targets established in the Grant Agreement as regards land use, food security (complemented by the food sovereignty concept in the current report), resource efficiency and societal inclusion.

In the following paragraphs proposed objectives regarding each pillar are presented together with the respective KPIs.

- **Pillar 1: Land use**

  According to D1.1, the limits to available land constitute one of the major constraints in the efforts to promote UA (D1.1, 2018, p.16). In addition, land use is approached through 3 components: Institutional, spatial and functional (D1.1, 2018, pp.16-17). The institutional component refers to the legal aspects of land use, i.e. the decision to allocate land to different purposes (D1.1, 2018, p.16). The spatial component refers to the relationship between UA and the location where it takes place (D1.1, 2018, pp.16-17). Last, the functional component refers to the ways in which cultivation of plants takes place (D1.1, 2018, p.17). Additionally to these components, economic and cultural factors play a role in the allocation of land for UA (D1.1, 2018, p.17). The economic factors refer to land ownership and affordability, and the cultural factors refer to life-styles and traditions (D1.1, 2018, p.17).

  Potential objectives could be:

  - Review and promote changes in the institutional setting as regards the allocation of land to UA.
  - Contribute to changing perceptions and attitudes towards the use of land for UA

- Promote technologies for more efficient use of land for UA. Increase the land used for UA
- Identify and promote the most appropriate plant growing techniques for each location in their cities / metropolitan areas
- Secure tenure rights
- Remove barriers to UA on privately owned land.
- Include UA in comprehensive plans and strategies

KPIs established in the GA

- Unused land to be used : Target value: 20ha (in total for all the showcase locations)

- **Pillar 2: Food security – Food sovereignty**

"Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life" (FAO, 2006, cited in D1.1, 2018, p.27). SiEUGreen aims to increase food security through a circular model of UA. Economic factors such as income, trade and local food production are part of the challenge (D1.1, 2018, p.28). The difficulty to present evidence on the contribution of UA to food security is an additional challenge (D1.1, 2018, p.28). In order to address this challenge, a number of indicators have been developed which measure food security. These indicators (availability, access, utilization and stability) (D1.1, 2018, pp.28-29) can be used by SiEUGreen showcases to demonstrate that the circular model of UA can provide increased food security.

Potential objectives could be:

- Facilitate access to healthier and more fresh food (pesticides-free, consumed within a few days after harvesting)
- Increase the quantity of food produced locally

KPIs established in the GA

- Amount of secure (FAO) food produced (WP3) in relation to the amount of food produced without the project. Target value: > 50% increase | 12000kg (in total for all the showcase locations)

As it has been discussed in D1.1, food security does not provide an adequate framework for the development of food production metrics at the local level. To

address this inadequacy, the food sovereignty (FSv) approach has been proposed. FSv is commonly described as 'the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems'[4]. In the context of FSv the following indicative objectives can apply to the showcase locations:

- Ensure access to natural and other resources

  Potential Key Performance Indicators

  - Share of patented seeds as percentage of total seeds used
  - Land dedicated to UA as percentage of total land

- Diversify production model

  Potential Key Performance Indicators

  - Population active in UA
  - Share of women active in UA
  - Population below the poverty line
  - Conservation agriculture area as percentage of total area dedicated to UA
  - Land under organic management as percentage of total land used for UA

- Limit international trade

  Potential Key Performance Indicators

  - Agricultural raw material imports

- **Pillar 3: Resource efficiency**

  Resource efficiency means "using the Earth's limited resources in a sustainable manner while minimising impacts on the environment" (D1.1, 2018, p.45). A resource-efficient agriculture uses with prudence natural resources such as soil and water as well as inputs such as energy, fertilisers and pesticides and has low impact on biodiversity within the outside the soil and lower GHGs emissions. The same principles of resource efficiency should apply as well to UA. To achieve this,

[4] Nyéleni. 2007. "Nyéléni Declaration. Sélingé, Mali: Forum for Food Sovereignty." Accessed May 4, 2012. www.nyeleni. org/spip.php?article290, cited in Binimelis R. et al (2014). Adapting established instruments to build useful food sovereignty indicators, *Development Studies Research,* Vol 1, No1, p.325

innovation has a salient role to play, and this is one of the goals of SiEUGreen; to demonstrate and advance technologies and tacit knowledge in order to maximize resource efficiency. Circularity is a significant paradigm change in the efforts to accomplish resource efficiency as it not only commits to using fewer resources, but also aims to reduce waste by creating inputs and energy to be reused in the same system. These dimensions of resource efficiency should be taken into consideration when defining the vision and the objectives of each of the showcases.

Potential objectives could be:

- Reduce, reuse, recycle waste: Establish **circularity**
- Prudent use of natural resources, energy and agricultural inputs
- Less impact on biodiversity and water
- Lower GHGs emissions

KPIs established in the GA:

- Reduction of the water and energy footprints. Target Value: 90%; 1270m3 methane/year converts to electricity; 3190 kWh/year, heat; 9580 kWh/year, CO2 for the greenhouse use: 1550 m3/year.

- **Pillar 4: Societal inclusion**

The goals of SiEUGreen as regards societal inclusion are as follows (D1.1, 2018, p.64):

SiEUGreen societal inclusion goals
a. Increase understanding of the social and economic potentials of UA
b. Improve access to recreational activities
c. Increase social cohesion
d. Create jobs
e. Increase knowledge of organic gardening practices
f. Improve quality of life
g. Improve social, economic and cultural governance of UA
h. Improve children's knowledge of healthy food
i. Increase social capital through UA

The objectives of the showcases as regards societal inclusion should correspond to one or more of the above goals.

Other potential objectives are:

- Support historically disadvantaged communities and neighbourhoods by increasing the land area permanently available for UA
- Emphasise equity and social justice in UA practices
- Make use of UA as an integration strategy for refugees and migrants.

Established at the GA KPIs:

- Engagement and behaviour change workshops (T3.2) Target value: 2 in each showcase
- Number of unemployed involved in the activities. Target: 500
- Individuals involved in showcases. Target: 5000
- Households involved in showcases. Target: 750
- Level 1: Resident level/ Households: Over 1000 individuals in each of the 5 geographical areas
- Level 2: Municipalities/ Communities: Active community members from the case study cities including marginalized groups such as refugees, elderly, excluded groups etc. will benefit from the project
- Level 3: International stakeholders: Policy-makers, SMEs and researchers from China (showcase), Turkey (showcase), Greece (awareness), Denmark (showcase), Norway (showcase).

Besides the above, the showcases according to the Grant Agreement should accomplish the following construction / infrastructure related minimum targets:

- Balcony gardens. Target value: 90
- Organic (rooftop) restaurants. Target value: 2

2.2 Community engagement

In order to deploy the showcases, the Community of people involved should be defined with the view to determine roles and responsibilities (as regards the implementation team), needs and interests of users and stakeholders, as well as engagement strategy and targets. In the SiEUGreen Grant Agreement all the target groups are called “stakeholders”. In this deliverable we make a distinction between immediate participants in the showcases (users) and the wider community of stakeholders who shall be interested in the showcase (and project) activities.

Team

As regards the implementation team, the following requirements should be fulfilled:

- Designation of the showcase leader: In each of the showcase locations one person must conduct the coordination and supervision of the activities. This person will be responsible to communicate with the WP3 leader and with other WP leaders as needed. The showcase leader should be acquainted with both UA and team management. A deputy leader could be established to assist the leader in his/her activities.
- Allocation of roles: The roles should include the following areas: **Technology deployment and infrastructure**, **dissemination and engagement of users and stakeholders**, **food production - agronomy**, **financial issues and reporting**, and, if applicable, (**landscape) architecture**. For each of these areas the relevant professionals must be identified on the basis of their experience and qualifications.
- Elaboration of staff recruitment policies

  In case not all categories of professionals needed for the showcase deployment are staff of the municipality, then new employees must be recruited or agreements with external contractors must be forged. The latter seems to be the best option as the staff of the subcontractor will already be sufficiently trained, but a public tender might be needed according to the EU and to national regulations.
- Definition of the team training if needed (e.g. usage of COMMURBAN)

  First, in case new professionals are recruited, there is a need to familiarize them with the showcase setting, vision and objectives, technology deployment process and engagement strategy. The showcase deputy leader will be responsible to guide these professionals into these aspects of the showcase.

  Second, a close collaboration must be established between the showcase leaders and the COMMURBAN design and development team in order to train the showcase professionals in the use of the app. Additionally, the showcase team will contribute to establishing the specifications for COMMURBAN, as they will be the ones to use the app and to diffuse its use among the local population.

Users

The immediate participants in each showcase must be defined. Different groups of participants are foreseen to be involved in each showcase, and some of them are already specified in the SiEUGreen Grant Agreement. The showcase team should elaborate further on the expected participants and define the added value of the UA setting for each group. The following steps should be implemented by each showcase team:

- Define the categories of users

  First the showcase team is required to define the expected categories of people to be involved in the UA setting established in each showcase. The targeted categories are unemployed people, the elderly, school dropouts and migrants, as well as the residents as a whole. However additional categories can be involved and it will be beneficial for the community to bring together different groups of people towards a shared goal.

- Define the targets (e.g. number of users involved, how to measure them, how to monitor)

  Each showcase team should, by taking into consideration the targets in pages 16-17 of this deliverable, specify further the number of users they envisage to involve in the activities in their showcase. They should define targets for each of the category of users to be involved. The targets should be ambitious enough to meet the overall targets of the Grant Agreement but also realistic.

- Develop an engagement strategy (awareness, COMMURBAN, etc)

  In order to achieve the targets established in the previous paragraph a comprehensive engagement strategy must be developed by the showcase teams in order to ensure active involvement of the users in the process. This strategy should include the following:

  - Analysis of the characteristics and needs of each user group. Age, employment, free-time, prior involvement in social innovation initiatives, inherent motivation for participation in the showcase. This analysis will be performed based on users' involvement through workshops or focus groups, which will define the needs, interests and challenges of being involved in UA and identify the ways how these can be efficiently addressed.,
  - Definition of the channels and media which will be used to reach out to each user group. These can include traditional media, such as TV and newspapers, the social media of the municipalities which host the showcases, as well as the COMMURBAN, whose use should be promoted extensively by the showcase teams.

- Timetable

  Following the above-mentioned steps, the time-table for the engagement strategy should be established. In this action, the showcase team should take

into consideration the show-cases time-frame as presented in page 10 of this deliverable.

Stakeholders

Each showcase team should carry out the following steps as regards stakeholder engagement:

- Define the categories of relevant stakeholders

  The showcase team should also determine which stakeholders to approach, based on their interest in UA and on their capacity to contribute to upscale and replicate the SiEUGreen model of UA. The following types of stakeholders will be possibly interested in the SiEUGreen showcases:

  - **Technology and infrastructure providers**, such as solar panel producers and vendors, biowaste, organic waste and water waste treatment companies, producers of the relevant toilet technologies.
  - **Businesses in the agro-food value chain**, such as food wholesalers and retailers, including small vendors in local food markets, supermarkets, food processors, and restaurant cafes, organic fertiliser producers and organic food producers
  - **Urban and spatial planners, agronomists**
  - **Policy-makers**, including local and regional politicians, personnel of regional development offices and policy advisors, other municipalities and municipality associations
  - **Professionals such as business consultants**, who could, in synergy with other relevant professionals (such as **marketing professionals**), advise the urban food producers towards the scale-up of their activities, through for example the development of viable business models.
  - **Researchers** in the green, blue and yellow technologies as well as socioeconomic sciences researchers who shall be interested in the benefits of UA for the society and the economy.
  - **NGOs** active in the domains of food and agriculture, sustainability, and societal inclusion.
  - The **Media**

  In each of the showcase locations these and other relevant stakeholders will be mapped at the local and regional level, i.e. a list of the organisations should be

developed, which will include information about the type of the organisation and the contact persons related to UA.

- Define the targets

  Following the mapping of the stakeholders, the showcase team should establish the targets of how many (and which ones) of each category they aim to engage further in the project activities, for example by inviting them to the showcase workshops and determining the theme of each workshop according to the interests of the different groups. The targets should be ambitious to meet the Grant Agreement targets, but they should also take into account the available resources (human, financial, etc.).

- Define engagement strategy

  In order to engage the stakeholders, the following steps should be implemented by the showcase team, in line with the SiEUGreen Dissemination and Communication plan:

  - Definition of the needs and interests of each category of stakeholders as regards UA.
  - Elaboration of a plan regarding which events and activities will be relevant for each group of stakeholders. According to the Grant Agreement in each showcase location at least **2 workshops** should be organized. It is advisable to target **different segments of the stakeholders** in each workshop. Other activities, like hands-on training on UA techniques could be organized in order to engage the civil society and the wider public.
  - Identification of the relevant means, materials and channels for the diffusion of the message to each stakeholder category. For many of these categories direct communication first via email and second via phone might be the best strategy. Local social media, in turn, seem to be a relevant tool to approach NGOs and researchers.

- Timetable (based on available info)

  The next step should be the establishment of a time-plan for the implementation of the stakeholder engagement strategy. In the time-plan the deadlines for each of the above mentioned actions will be defined.

2.3 Technology

The deployment of the three technologies foreseen (green, blue and yellow) in the different showcase locations is a challenge for the project and requires careful planning. Systems produced in different countries or even continents are going to be integrated, with the purpose to demonstrate circularity in practice, produce food for the targeted populations and promote the accomplishment of the vision and objectives of each showcase.

- Define **existing** technology and infrastructure

  The first step in each showcase location should be to list the technologies used (in case UA is already mature in the showcase location) and identify the room for improvement towards more circularity. This has already been established in the SiEUGreen Grant Agreement, but this exercise will be useful for the showcases as it will demonstrate the benefits of each of the new technologies. This exercise will also help with the benchmarking and impact assessment task, as it will provide some initial information towards the impact stemming from the use of each technology

  For some of the showcases the infrastructure and technology that is in place was identified in the Showcases Deployment Workshop (See Annex A). The remaining showcases should document what infrastructure / equipment is in place.

- Define **SiEUGreen technology to use/deploy**

  This has already been established in the Grant Agreement. The following table displays which technology will be deployed in each showcase.

Technology	Norway Fredrikstad	Turkey Hatay	China, Beijing	China Changsha	Denmark Aarhus
Green technology					
1.Innovative greenhouse technology using special insulation, solar heat storage, and biogas for light CO2 and heat	√				
2. Greenhouse technology, traditional		√	√	√	√
3. Polytunnels					√
4. Mobile gardens					√
5. Soil-based traditional plant growing	√	√	√	√	√
6. Water-based hydroponic culture	√	√	√	√	
7. Aquaponic cultures (plant fish fully recycling technology)		√	√	√	
8. Paper-based plant growing technology	√	√	√	√	√
9. Balcony gardens	√		√	√	√
Blue technology					

1. Biogas production from Antec Biogas pilot scale reactor	√				
2. Treatment of Biogas digestate by biofiltration	√				
3. Struvite precipitation from biofilter percolate	√			√	
4. Use of organic waste product for the production of insects in connection of aquaponic system	√	√			
5. Biofiltration of urine	√				
6. Co-composting of organic house hold waste /greenwaste and solar dry toilet residue	√			√	√
1. Vacuum- /low flush toilets	√			√	
2. Urine diverting toilets	√				
3. Solar dry toilet	√			√	√
4. Greywater treatment using a Biofilter/Filterbed treatment system	√			√	
5. Greywater treatment using a biomembrane system	√			√	
6. Green wall for greywater treatment	√				
1. Green roof light weight aggregate (LWA) for water retention	√			√	
2. Green wall for water retention	√				
4. Wetland/pond system for stormwater disposal	√			√	
5. Wetland/infiltration system for stormwater disposal	√			√	
Yellow technology					
1.Borehole thermal energy storage (BTHS)	√				
2. Ground source heatpumps (GSHP)	√				
3. Photovoltaic panels (PV)	√	√	√	√	
4. Solar collectors for heating water	√			√	
5. Combined heat and power (CHP) from biogas	√				

Table 1- Technologies to deploy as foreseen in the GA

The showcases together with NMBU and NIBIO will review this table and will identify (based also on the suggestions in pages 29-30 of the current deliverable) whether they will deploy indeed all the technologies foreseen in the GA.

Deviations from the GA should be justified duly.

- Define the additional infrastructure and equipment (type, cost, purchase method (in case of a public tender), etc.)

  The showcase team together with the technology providers is required to plan for the integration of the respective technologies in the existing technological setting and infrastructure or determine what additional infrastructure and equipment must

be purchased and set up in the showcase locations so that it can be combined with each of the technologies to be deployed. The type of infrastructure/ equipment, the costs and the purchase method (e.g. public tender) must be defined.

The showcase team can consult the needs for additional infrastructure as defined at the Showcase Deployment Workshop (p.30 of the current deliverable).

- Timetable (plan for the deployment of the technologies)

  In each of the showcase locations a time-plan for the set-up and deployment of the technologies must be established (see Section 5.7). The technologies might be set-up and deployed concurrently and/or sequentially.

- Patent analysis

  As has been established in the SiEUGreenGrant Agreement, the background knowledge will be shared freely among the partners to enable project execution. However, it is advisable that before the deployment of the respective technologies the showcase team in each location should identify existing knowledge (in the locations where UA projects are already in place) which could be protected by IPRs, so as to ensure that the consequent transfer of knowledge from the showcase location to the technology provider to make adjustments and improve the technology will take place without conflicts about IPR ownership.

(To define the above, organise internal meetings if necessary)

2.4 Regulatory requirements

A number of additional requirements have been identified which the showcases must correspond to. These include the rules that apply as regards the use of pesticides or biopesticides, the building safety laws, food safety regulations and good practices for the engagement of volunteers. The showcase locations should identify the respective rules or good practices and ensure that they comply with them.

- Rules for the application of pesticides

  The aim of SiEUGreen is to grow organically in the showcase locations. However, in case this aim is not adopted by some of the showcase locations, then the national or EU regulation for the application of pesticides and biopesticides will apply. The showcase team and in particular the agronomist of the team must be aware of these rules and will be responsible to ensure their enforcement.

- Building safety laws

  In the showcases where balconies and/or terraces will be used, the building safety laws must be identified and respected.

- Food safety regulations

  Growing food that respects food safety regulations is quintessential for the project, as it will demonstrate to city dwellers that a circular urban farming model is feasible and has no risks for human health. The technologies deployed in the showcase locations, particularly technologies for the treatment of organic waste, biowaste and waste-water are at an advanced stage and respect all food safety regulations, as demonstrated by the quality systems they adhere to.

- Best practices for the engagement of volunteers

  The users in the showcase locations will be volunteers, dedicating their time and effort to grow food and to help with social innovation. The showcase team should ensure that volunteers receive the guidance (and potentially training) needed, are involved in meaningful activities and do not substitute for paid labour. Best practices for the engagement of volunteers should be shared among the showcases.

3. Conclusions

Overall, a significant effort must be undertaken by the showcase team in order to prepare the ground for the deployment of the showcases. As illustrated in the previous chapter there are several areas which the showcase teams should reflect upon and prepare. This should be done as early as possible within the project duration, so that the actual work of the implementation of each showcase will run smoothly and without delays.

It should be noted here that in the preparatory work the showcase teams should consult WP3 leader for all the matters raised in this deliverable, WP7 and WP1 leaders for the engagement strategy and WP2 and WP3 leader for the technologies to be deployed.

4. Annex A – Showcase deployment workshop

Date: 23 November 2018

Location: Thessaloniki – Greece

Participants' list

a/a	Name SURNAME	Organisation
1	Luciane Aguiar Borges	NORDREGIO
2	Mustafa Donmez	HATAY
3	Kostas Iakovou	EMETRIS
4	Petter Jensen	NMBU
5	Kleoniki Kipourou	VILABS
6	Manoj Kumar Pandey	NMBU
7	Vasiliki Moumtzi	VILABS
8	Christel Celine Nguyen	NMBU

Objectives

The aim of the workshop was to provide ideas and guidance to the showcase teams on how they can correspond to the requirements established in Deliverable D3.1. The workshop tackled the showcases in Aarhus, Frederikstad and Hatay, as the relevant partners were present. However, the results are equally relevant for the showcases in Beijing and Changsha, which are also requested to meet the requirements of D3.1.

Methodology

The workshop was organized and conducted based on the Living Labs methodology, which required extensive interaction among the participants, joint brainstorming sessions and co-creation of the outcomes.

The workshop was divided in 2 sessions which tackled, first, the Vision, Objectives and KPIs of the showcases, and, second, the Technology and the Community.

In the first session, Mrs Vasiliki Moumtzi gave a presentation on the process of the workshop and the expected outcomes and a second presentation on the Vision, Objectives and KPIs of the showcases. Following the presentation, a brainstorming session took place, during which the participants were divided in 2 groups, and discussed and kept notes about the Vision, Objectives and KPIs of Aarhus and Frederikstad respectively. After that the participants formed one single group which discussed and kept notes about the showcase in Hatay.

In the second session, Mrs Kleoniki Kipourou presented the needs and requirements as regards the deployment of the Technologies in each showcase location and similarly about

the needs and requirements of establishing a Community of actors relevant for the showcases. Following the presentations, the participants formed a single group and identified ways that each of the showcases could correspond to the respective requirements.

Outcomes

1st session: Vision, Objectives, KPIs

In the first session, we identified that in the Aarhus showcase societal inclusion is the most prominent pillar, thanks to the efforts of Taste Aarhus Programme to use UA to activate underutilized spaces of the city and to promote social integration through UA. Resource efficiency is less prominent because compared to the other showcases fewer technologies will be deployed in Aarhus. However, it is still important as the deployment of these technologies will show that the reduction of waste is feasible.

As regards Frederikstad the participants concluded that societal inclusion is a less prominent pillar, because production will primarily take place in individual balconies, thus little interaction is foreseen, primarily among the balcony users.

Last, as regards Hatay, all four pillars were found to be equally prominent, thanks to the technologies to be deployed, to the explicit need to produce more food for the refugees and to the social integration challenge represented by the refugees.

The outcomes of the 1st session are summarised in the table below:

Showcase	**Objectives**			
	Land use	*Food security*	*Resource Efficiency*	*Societal Inclusion*
Aarhus	Reform the institutional setting in land use	Increase food production		Increase the number of UA initiatives
Frederikstad	Increase the land used for UA in the entire city Use of as many balconies as possible	Increase access to healthier food	Reduce water consumption Reduce the heating cost by approximately 30% Reduce GHGs emissions Replace mineral with organic	

			fertilizer	
Hatay	Land as m^2 of the infrastructure	Produce more food	Nutrient recycling Water resource efficiency	

Table 2 - Showcase proposed objectives

2nd session: A) Technology

Existing infrastructure

A first attempt was made to define the existing infrastructure for the two of the three showcases tackled in this meeting:

- Frederikstad: Hospital building (skeleton), municipal water and sewage, district heating
- Hatay: Greenhouses, land, water

Technologies to deploy

It was discussed whether all the technologies foreseen (at the Grant Agreement) to be deployed by the showcases are feasible to deploy. The table below is the same as table in Pages 22-23, except that the questions about whether to deploy some technologies or not are presented with a question-mark:

Technology	Norway Fredrikstad	Turkey Hatay	China, Beijing	China Changsha	Denmark Aarhus
Green technology					
1.Innovative greenhouse technology using special insulation, solar heat storage, and biogas for light CO2 and heat	√				
2. Greenhouse technology, traditional		√	√	√	√
3. Polytunnels					√ ?
4. Mobile gardens					√
5. Soil-based traditional plant growing	√	√	√	√	√
6. Water-based hydroponic culture	√	√	√	√	
7. Aquaponic cultures (plant fish fully recycling technology)		√	√	√	
8. Paper-based plant growing technology	√	√ ?	√	√	√ ?
9. Balcony gardens	√		√	√	√ ?
Blue technology					
1. Biogas production from Antec Biogas pilot scale reactor	√				
2. Treatment of Biogas digestate by biofiltration	√				
3. Struvite precipitation from biofilter percolate	√			√	

4. Use of organic waste product for the production of insects in connection of aquaponic system	√	√			
5. Biofiltration of urine	√				
6. Co-composting of organic house hold waste /greenwaste and solar dry toilet residue	√			√	√
1. Vacuum- /low flush toilets	√			√	
2. Urine diverting toilets	√				
3. Solar dry toilet	√			√	√
4. Greywater treatment using a Biofilter/Filterbed treatment system	√			√	
5. Greywater treatment using a biomembrane system	√			√	
6. Green wall for greywater treatment	√				
1. Green roof light weight aggregate (LWA) for water retention	√			√	
2. Green wall for water retention	√				
4. Wetland/pond system for stormwater disposal	√			√	
5. Wetland/infiltration system for stormwater disposal	√			√	
Yellow technology					
1.Borehole thermal energy storage (BTHS)	√ ?				
2. Ground source heatpumps (GSHP)	√ ?				
3. Photovoltaic panels (PV)	√	√ ?	√	√	
4. Solar collectors for heating water	√ ?			√	
5. Combined heat and power (CHP) from biogas	√				

Table 3 - Technologies to deploy

The following needs for additional infrastructure were identified:

- Aarhus: Dry toilet, green devices for enhancing greenhouse
- Frederikstad: Vacuum toilets, garbage grinders, biogas reactor, greenhouse, IT software and hardware, purification equipment, biogas digestate, greywater purification plant; Infrastructure for managing storm water
- Hatay: Equipment for aquaponics, greenhouse infrastructure, monitoring equipment, panels for solar energy generation.

2nd session: B) Community

The following categories of users were identified at the workshop:

Showcase	**Users**					
	Residents	*Women*	*Refugees*	*NGOs*	*Schools*	*School dropouts*
Aarhus	X			X	X	X
Frederikstad	X					

Hatay	X	X	X			

Table 4 - Categories of users

The following categories of stakeholders were identified (apply to all showcases):

- Marketing professionals
- Municipality associations
- Consultants
- Restaurant – cafes
- Ministries of agriculture and food or of the environment
- Producers and vendors of PV panels
- Processors
- Local food market vendors
- Organic food shop owners

Last, a number of activities for the showcase engagement strategy were identified:

- Educational activities, such as trainings and interactive workshops
- Organisation of competitions with prizes
- Events open to the public
- Use of the COMMURBAN to promote the showcases' progress

5. Annex B – Templates

5.1 Vision, objectives and KPIs

In the following tables the showcase teams should fill in their vision, objectives and KPIs after they have established them following the instructions in chapter 2.1 of the deliverable.

Vision:	
Objective No1:	
Objective No2:	
Objective No3:	
Etc	

KPI description	**Target value**	**Related objective**

5.2 The showcase team

In the following table the showcase teams should fill in the information about the members of the team.

Title and Name SURNAME:	
Role in the showcase:	
Profession:	
Address:	
Phone:	
Email:	
Skype:	

* Please replicate the table for all the team members.

5.3 Mapping of stakeholders

Please fill in the table below with information about the organisations that comprise the stakeholders of the project at the local and regional level.

Name of organisation and website	Stakeholder Category	Contact person name	Contact person Email	Contact person Telephone number

5.4 Engagement strategy per category of stakeholder

Please, fill in the table below with details about developing the engagement strategy towards those organisations (from the total number mapped in the previous section) that you have chosen to engage.

Stakeholder Category No 1:

Target number of organisations to engage:		
Names of selected organisations:		
Needs and interests of the organisations:		
Types of activities to engage them	a/a	
	1	
	2	
	3	
	4	
	5	

* Please replicate the table for all the categories (you can find the list of categories in page 20 of this deliverable) of stakeholders.

5.5 Engagement strategy time-table

Please fill in the table below with the time-plan of engagement actions.

a/a	Description of activity	Deadline
1		

2		
3		
4		
5		

5.6 Existing and extended technologies

Please fill in the table with the technologies that are currently in use in your showcase location and the technologies you are going to use from SiEUGreen.

In case of deviation to the GA, please provide a concrete justification.

Existing technology	**Extended through SiEUGreen**
Green technologies	
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
Add more lines if needed	Add more lines if needed
Blue technologies	
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
Add more lines if needed	Add more lines if needed
Yellow technologies	
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
Add more lines if needed	Add more lines if needed

5.7 Technology deployment time-plan

Please, fill in the table below with the technologies and the planned start of set-up of infrastructure (if this has already taken place, please, fill in the date it started) and the start

month of the deployment of each technology. Follow the numbering from the previous table.

a/a	Technology	Start of set-up of infrastructure (Month of the project)	Start of deployment (Month of the project)
Green technologies			
1			
2			
3			
4			
5			
6.			
Add more lines if needed			
Blue technologies			
1			
2			
3			
4			
5			
Add more lines if needed			
Yellow technologies			
1			
2			
3			
4			
5			
6.			
Add more lines if needed			

5.8 IPR requirements

Please fill in the following table with the information needed, as regards the IPR strategy that applies to each technology.

Existing technology	Is it protected by IPRs?	Will we protect it?	Relevant IPR instrument	Actions

	(YES/NO)	(YES/NO)	(probably patent[5])	

5.9 Regulatory requirements

Please fill in the following table with relevant information about the laws that apply in each case.

Requirement	Laws/rules/best practices that apply	Implications and actions to fulfill the requirement
Safe application of pesticides		
Building safety		
Food safety		
Engagement of volunteers		
Domestic waste management		

5.10 Requirements checklist

Please tick the items in the list when the following actions have been accomplished.

#	Requirement	Tick when done (include date)
1	Technology adapted for deployment	
2	Infrastructure in place	
3	Vision, Specific objectives and KPIs established	
4	Personnel recruited and trained	
5	Web/mobile app operational	
6	Users having confirmed their participation	
7	Patent analysis carried out	
8	Regulatory requirements identified and rules set in place to comply with them	

[5] Other IPR instruments are Copyright and Trade-marks and informal ones are the Confidential Business Information / Trade secrets. See European IPR Helpdesk, Factsheet: How to manage confidential business information, June 2015, https://www.iprhelpdesk.eu/sites/default/files/newsdocuments/Fact-Sheet-How-to-Manage-Confidential-Business-Information.pdf (accessed 23 October2018)

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SiEUGreen
Sino-European innovative green and smart cities